

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC. 20554

<b>In the Matter of</b>	)	
	)	
<b>Inquiry Regarding Carrier</b>	)	<b>ET Docket No. 03-104</b>
<b>Current Systems, including</b>	)	
<b>Power Line Broadband Systems</b>	)	
	)	

**To: The Commission**

**REPLY COMMENTS of Nickolaus E. Leggett**  
**N3NL Amateur Radio Operator to the Comments Submitted by the American**  
**Radio Relay League, Inc. (ARRL)**

The following is a set of reply comments from Nickolaus E. Leggett, an amateur radio operator (Extra Class licensee – call sign N3NL), inventor (U.S. Patents # 3,280,929 and 3,280,930 and one electronics invention patent application pending), and a certified electronics technician (ISCET and NARTE). I also have a Master of Arts degree in Political Science from the Johns Hopkins University (May 1970).

My comments are a reply to the comments submitted by the American Radio Relay League, Incorporated (ARRL). My comments discuss both social science and technical aspects of the ARRL comments.

**Increase of Noise Levels in Residential Areas**

The ARRL states in their comments that “The increase in noise levels in residential areas over current ambient levels is reasonably calculated to be as much as 65 dB, due to the efficiency of the powerlines as radiators”. An increase in noise of even a fraction of that level is sufficient to end amateur radio operation. In addition, a similar amount of noise will block short wave listening on the international short-wave frequency

bands and radio astronomy observations in the short wave bands. The student radio astronomy observations of Radio JOVE are especially vulnerable to this increased interference. Radio JOVE is a project operated by educational organizations with the assistance of the National Aeronautics and Space Administration (NASA). In Radio JOVE, students of various ages build and operate their own decameter radio telescopes.

### **Zero-Sum Game with Other Short-wave Users**

The ARRL has proposed that BPL should not be allowed to operate in or near any amateur radio allocation. I agree with this proposal.

However, we should not allow this to become a zero-sum game where protecting amateur radio leads to an increased BPL impact on other short-wave users such as short-wave broadcast listeners, Military Affiliate Radio System (MARS) operators, or radio astronomy observers. All of these users need specific frequency bands that are prohibited for BPL operation.

The basic problem is that the BPL technology emits a high level of spurious radio frequency energy on the very valuable short-wave bands. The Commission needs to map out quiet bands that allow the other short-wave uses to continue despite BPL operations.

### **BPL Safety Problem**

The discussion to date has been on the radio interference potential of the BPL technology. The potential safety problem with BPL has been mostly ignored.

The Access BPL system requires that bypass components be used to conduct the signals around the transformers used by the electric power grid. If any of these bypass components fail, high voltages could be conducted into the home wiring causing deaths, injuries, and fires.

I do not know the probability of such dangerous failures. FCC Engineering studies are required to determine the probability of such events given the types of bypass components planned for various Access BPL systems. However, as an electronics technician, I know that even the finest components will fail over time. We need engineering planning for components that will fail in the safest manner possible including during electrical storm lightning hits.

At the same time, the Commission should study the market impacts of BPL safety failures and subsequent litigation. One can easily imagine a “Hindenburg effect” where a publicized failure and fatalities suppress the market for BPL services.

### **Impact on the Future Supply of Engineers, Scientists, and Technicians**

If the BPL greatly inhibits amateur radio as anticipated by the ARRL in their engineering studies, then BPL will negatively impact the future supply of engineers, scientists, and technicians for the Nation’s defense and economy. Many people start their careers through amateur radio. If the amateur radio bands are not useful and amateur radio operators are subject to legal action for interference to BPL, few young people will go into amateur radio and progress into technical careers. This negative impact of BPL will be reinforced by the impact of restrictive covenants and homeowner associations that prohibit amateur radio antennas of any type.

Over time the shortage of technical people will damage the defense and civilian industries of the United States. This will contribute to a gradual decline in the great power status of the Nation. A preliminary example of this type of phenomenon can be seen in the Commission itself that is having problems hiring enough qualified engineers to conduct the Commission’s business.

### **Where Will Amateur Radio Stations Operate?**

If a noisy BPL system is established, where will amateur radio operation take place? Residential ham radio will be blocked by Access BPL in the neighborhood and by In-Home BPL within the residence. Mobile ham radio will be blocked by Access BPL on the power lines along every road. Even man-pack pedestrian-mobile ham radio will be blocked by the ubiquitous Access BPL on the power lines.

A few wealthy amateur radio operators will set up solar-powered ham radio stations in remote locations distant from Access BPL power lines. However, this solution is not practical for most amateur radio operators. Who will these few wealthy hams talk to? Perhaps a few other wealthy hams on ocean-going yachts. Such a restricted amateur radio would probably not be a viable communications service.

### **Underground BPL Operation**

Perhaps a quieter Access BPL could be established by placing the electric power lines within shielded conduit and burying the conduit underground. Underground power lines are highly desirable for safety, reliability, and aesthetic reasons. Here in my community of Reston Virginia the power lines are underground.

If the Access BPL power lines were required to be underground, the radiofrequency (RF) emissions would potentially be greatly reduced and the Access BPL service might be acceptable. The Commission needs to study the improvement of the BPL system that could be achieved by burying all Access BPL power lines. This study should include the additional cost of buying power lines and the potential for BPL to help pay the added cost.

### **General Comment**

The ARRL comments are of high quality and should be seriously studied by the Commission. In addition, the ARRL should be thanked for conducting their engineering studies of BPL.

**Respectfully submitted,**

**Nickolaus E. Leggett, N3NL**  
**Amateur Radio Extra Class Operator**  
**1432 Northgate Square, Apt. 2A**  
**Reston, VA 20190-3748**  
**(703) 709-0752**  
**[nleggett@earthlink.net](mailto:nleggett@earthlink.net)**

**July 23, 2003**

**Statement of Service**

A copy of this reply comment has been sent to the American Radio Relay League (ARRL) by USPS First Class Mail.

**Mr. Christopher D. Imlay  
Booth, Freret, Imlay, & Tepper, P.C.  
14356 Cape May Road  
Silver Spring, Md. 20904-6011**

A copy has also been sent to the ARRL by electronic means.